iPSC-Derived Smooth Muscle Progenitors for Treatment of Abdominal Aortic Aneurysm

Grant Award Details

iPSC-Derived Smooth Muscle Progenitors for Treatment of Abdominal Aortic Aneurysm

Grant Type: Inception - Discovery Stage Research Projects

Grant Number: DISC1-10603

Investigator:

Name:	Ngan Huang
Institution:	Palo Alto Veterans Institute for Research
Type:	PI

Disease Focus: Vascular Disease

Award Value: $172,621

Status: Pre-Active

Grant Application Details

Application Title: iPSC-Derived Smooth Muscle Progenitors for Treatment of Abdominal Aortic Aneurysm

Public Abstract:

Research Objective

To assess the therapeutic effect of human induced pluripotent stem cell (iPSC)-derived smooth muscle progenitors (pSMCs) for treatment of abominal aortic aneurysm (AAA).

Impact

Currently, there are no pharmacologic therapies for AAA. If successful, delivery of autologous pSMCs to the site of AAA will halt or reverse the progression towards a rupture-prone aneurysm.

Major Proposed Activities

- Derive and characterize iPSC-derived pSMCs in vitro.
- Deliver pSMCs to the abdominal aortic wall of mice with induced AAA.
- Quantitatively assess pSMC survival non-invasively by bioluminescence imaing for up to 28 days.
- Quantify the abdominal aortic diameter by ultrasound imaging for up to 28 days.
- After 28 days, euthanize animals and perform histological quantification of elastin content and pSMC cell survival.
- Perform quantitative gene expression analysis of elastin expression.

Statement of Benefit to California:	We propose to generate human induced pluripotent stem cell-derived smooth muscle progenitors for treatment of abdominal aortic aneurysm (AAA). This stem cell-based therapy will benefit California by providing a new treatment for AAA. Production of these therapeutic cells at the clinical scale will provide job opportunities to citizens of California. The benefits of this new regenerative therapy will have a tremendous impact on the state of California and to patients suffering from AAA.

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